

[FIG. 1]

ELECTRONIC THERMOSTAT CONTROL (PER-SECOND PROCESSING)

S101 CAPTURE OF CONTROL WATER TEMPERATURE AND RADIATOR
OUTLET WATER TEMPERATURE

S102 CALCULATION OF BASE CURRENT (MAP, APPROXIMATION
FORMULA, AND SO FORTH)

[INSERT: Y AXIS: BASE CURRENT; X AXIS: RADIATOR OUTLET WATER
TEMPERATURE

CURRENT VALUE FOR TARGET WATER TEMPERATURE STABILIZATION (ACTUAL
VALUE)]

S103 CALCULATION OF LOAD FLUCTUATION AMOUNT (VARIATION
IN WATER TEMPERATURE GRADIENT)

S104 CALCULATION OF POWER DISTRIBUTION AMOUNT (HEATING
COEFFICIENT $K_w \times$ LOAD FLUCTUATION AMOUNT)

S105 UPDATE OF POWER DISTRIBUTION-HOLDING AMOUNT (POWER
DISTRIBUTION-HOLDING AMOUNT \leftarrow POWER DISTRIBUTION-HOLDING
AMOUNT + POWER DISTRIBUTION AMOUNT)

S106 AUTOMOBILE STOPPED OR CONTROL WATER TEMPERATURE AT
OR ABOVE THERMOSTAT POWER-DISTRIBUTION CUT WATER TEMPERATURE?

S107 POWER DISTRIBUTION CUT

S108 VALUE OF POWER DISTRIBUTION-HOLDING AMOUNT?
AT OR ABOVE +1

S109 FULL POWER DISTRIBUTION OUTPUT (MAX CURRENT)

S110 UPDATE OF POWER DISTRIBUTION-HOLDING AMOUNT

POWER DISTRIBUTION-HOLDING AMOUNT \leftarrow POWER DISTRIBUTION-HOLDING
AMOUNT - (MAX CURRENT - BASE CURRENT)

AT OR BELOW -1

S111 POWER DISTRIBUTION OUTPUT CUT

S112 UPDATE OF POWER DISTRIBUTION-HOLDING AMOUNT

POWER DISTRIBUTION-HOLDING AMOUNT \leftarrow POWER DISTRIBUTION-HOLDING
AMOUNT + BASE CURRENT

BETWEEN -1 AND +1

S113 BASE CURRENT OUTPUT

[FIG. 2]

FAN CONTROL (PER-SECOND PROCESSING)

S201 THERMOSTAT POWER DISTRIBUTION CUT?

S202 CAPTURE CONTROL WATER TEMPERATURE

S203 FAN CONTROL TEMPERATURE DIFFERENCE ΔT CALCULATION
(CONTROL WATER TEMPERATURE - THERMOSTAT FULLY-OPEN TEMPERATURE
WITHOUT POWER DISTRIBUTION)

S204 PID CONTROL AMOUNT CALCULATION

S205 NE CORRECTION VALUE CALCULATION

NE CORRECTION VALUE = $N_e/3000$

S206 FAN TARGET ROTATION SPEED CALCULATION

FAN TARGET ROTATION SPEED = PID CONTROL AMOUNT \times
Ne CORRECTION VALUE

S207 DRIVE FAN TO FAN TARGET ROTATION SPEED

S208 CAPTURE CONTROL WATER TEMPERATURE (ANY OF BYPASS,
MIXING, AND RADIATOR OUTLET WATER TEMPERATURE)

S209 FAN CONTROL TEMPERATURE DIFFERENCE ΔT CALCULATION
(CONTROL WATER TEMPERATURE - THERMOSTAT FULLY-OPEN TEMPERATURE
WITH POWER DISTRIBUTION)

S210 PID CONTROL AMOUNT CALCULATION

S211 NE CORRECTION VALUE CALCULATION

NE CORRECTION VALUE = $N_e/3000$

S212 FAN TARGET ROTATION SPEED CALCULATION

FAN TARGET ROTATION SPEED = PID CONTROL AMOUNT \times
NE CORRECTION VALUE

S213 DRIVE FAN TO FAN TARGET ROTATION SPEED